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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,379	06/22/2001	Peter Dannenberg	GK-GEY-1112/	7202

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EXAMINER

CHANG, AUDREY Y

ART UNIT PAPER NUMBER

2872

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,379

Applicant(s)

DANNENBERG ET AL. 

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12, 14, 16, 17 and 19-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 14, 16, 17 and 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on September 19, 2002, which has been entered as paper number 8.
- By this amendment, the applicant has amended claims 12, 14, 16, 19, and 20, has canceled claims 13, 15 and 18 and has newly added claims 23-27.
- Claims 12, 14, 16, 17, and 19-27 remain pending in this application.
- The objection to the specification is withdrawn in response to applicant's amendment.
- The rejection under 35 USC 112, first paragraph, of claim 12, set forth in the previous Office Action dated June 19, 2002, is withdrawn in response to applicant's amendment.
- The rejections to claims 12, 14, 16, 17 and 19-22 under 35 USC 112, second paragraph, set forth in the previous Office Action are withdrawn in response to applicant's amendment.

Response to Amendment

1. The amendment filed on September 19, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure, is as follows: the newly added claim 23 recited that the surfaces of the two parts are uncoated before assembled. The specification only give support for *coating* the surface **before** the assemble of the parts, (please see the specification page 3, lines 13-20).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 23-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The reasons for rejection based on the newly added matters are set forth in the paragraph above.**

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 12, 14, 16, 17 and 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 12 and 14 have been amended to include the phrase "uncovered" that is indefinite and confusing since it is not clear it uncovered by what? Claims 16, 17 and 19-22 inherit the rejection from their respective based claim.

Claim 19 has been amended to be dependent from a canceled claim 15, which is therefore indefinite.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 12, 14, and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Farmiga (PN. 5,828,505) in view of the patent issued to Takahashi et al. (PN. 5,735,793).**

Claims 12 and 14 have been extensively amended; new grounds of rejection are therefore necessitated.

Farmiga teaches an *optical beam-shaping uniformizer construction and methods* for producing it, wherein the construction comprises the step of integrating or assembling at least two mirrored slabs (11 and 12) together to form a cavity within wherein the inner surface forming the cavity are coated with mirror coating. The mirrored slabs are fastened to form the cavity by using fastening means such as clamping means, (please see Figures 1B, 1C, 3, 4A-4C, 5A-5C). The beam-shaper uniformizer construction homogenizes the light as it enters the construction cavity from an input surface and exits from an output surface.

Claims 12 and 14 have been amended to include the feature that the surfaces are uncovered. Farmiga teaches that the mirrored slabs are made of mirror-coated glass which means that before the mirror coating is applied the slabs are uncovered, (please see column 4, line 30).

Claims 12 and 14 have been amended to include the feature having the at least two mirrored slabs engaged with projection and cutout. This reference does not teach such explicitly, however since the specification fails to teach the criticality of having this particular arrangement would overcome any problem in the prior art and such engagement is rather well known to common people such modification is therefore considered as obvious matter of design choice to one skilled in the art to provide an alternative arrangement for engaging the mirrored slabs.

Claims 12 and 14 have been amended to include the feature having the cavity being covered with a shrink tubing. This reference does not teach such explicitly. However using shrink tubing as a

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fastening means for holding two optical elements together in order to form optical cavity or simply to cover an optical means is very well known in the art as demonstrated by the teachings of Takahashi et al. *Takahashi et al* teaches a heat shrinking tube (300, Figure 8) that may be *wrapped* around the junction of a suction tube (100) and a pipe (132) so that the suction tube and the pipe are jointed and fastened to form the desired optical pipe with a cavity within, (please see Figure 8, column 14, lines 36-49). Takahashi et al teaches that the shrinking tube is shrunk so that it applied certain strength to the junction. It would then have been obvious to one skilled in the art to apply the teachings of Takahashi et al as an alternative fastening means to fasten the mirrored slabs of Farmiga in place in order to form the uniformizer construction for the benefit of providing a fastening means with *no filth-collecting gapes* formed in the interior of the joint, which implicitly *will be light-proof*. With regard to the positions of applying the heat shrinking tube it would have been considered to be an obvious matters of design choice to one skilled in the art since the positions of joints therefore the positions of the tube do not effect the performance of the beam-shaper construction as along as the general geometric shape is kept.

8. Claims 16, 17 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Farmiga and Takahashi et al as applied to claims 12 and 14 above, and further in view of the patent issued to Levis et al (PN. 5,902,033).

The optical beam-shaper-uniformizer construction taught by Farmiga in view of the teachings of Takahashi et al as described for claims 12 and 14 above has met all the limitations of the claims. Farmiga teaches that the construction with cavity within forms a geometric prism with various geometric shapes of inlet and outlet surfaces, (please see Figure 6). However it does not teach explicitly that the surfaces are of rectangular or square shape. *Levis et al* in the same field of endeavor teaches a light pipe integrator (15, Figure 1, 8, 9 and 10), wherein the light integrator is in the form of a geometric prism with *rectangular shape or square shape* of inlet and outlet surfaces for the benefit of providing desired beam

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shape to illuminate a liquid crystal display device. It would then have been obvious to one skilled in the art to apply the teachings of Levis et al to modify the beam-shaper construction of Farmiga for the benefit of providing a desired uniform beam shape.

With regard to claims 21 and 22, Farmiga does not teach explicitly to use the beam shaper construction to illuminate a matrix of image display elements. However it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987). Furthermore, it is rather well known in the art to use the tube typed beam shaper to illuminate matrix of image elements as demonstrated by the teachings of Levis et al wherein the light pipe integrator (15) is utilized to illuminate a light modulator panel such as *liquid crystal image display* (21) to create images, (please see Figures 1 and 2). It is well known in the art that light modulator panel such as LCD has a matrix form of image elements. It would then have been obvious to one skilled in the art to apply the teachings of Levis et al to apply the light shaper uniformizer construction of Farmiga to illuminate a light modulator panel for the benefit of providing an image projection device. Although these references do not teach explicitly that the light modulator panel is a matrix of tilted mirrors however such arrangement which known in the art as deformable micromirror device (DMD) is a standard image display device in the art such modification would therefore have been an obvious matter of design choice to one skilled in the art.

9. Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Farmiga in view of the patents issued to Takahashi et al and Lewis et al.

Farmiga teaches an *optical beam-shaping uniformizer construction and methods* for producing it, wherein the construction comprises the step of integrating or assembling at least two mirrored slabs (11 and 12) together to form a cavity within wherein the inner surface forming the cavity are coated with

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mirror coating. The mirrored slabs are fastened to form the cavity by using fastening means such as clamping means, (please see Figures 1B, 1C, 3, 4A-4C, 5A-5C). The beam-shaper uniformizer construction homogenizes the light as it enters the construction cavity from an input surface and exits from an output surface. Farmiga teaches that the mirrored slabs are made of mirror-coated glass which means that before the mirror coating is applied the slabs are uncovered, (please see column 4, line 30). This reference does not teach the slabs are *uncoated* before assemble however the specification of the instant applicant also does not teach such. Furthermore, to coat the slabs either before or after assemble are considered to be obvious matter of design choice to one skilled in the art since both will give the same result, namely a cavity with mirror coated inner surfaces.

This reference does not teach the slabs are formed with the cutout, however since the specification fails to teach the criticality of having this particular arrangement would overcome any problem in the prior art and such engagement is rather well known to common people such modification is therefore considered as obvious matter of design choice to one skilled in the art to provide an alternative arrangement for engaging the mirrored slabs. The features concerning the parts are 2 T-shaped and 2 I-shaped parts are considered to be obvious matter of design choice to one skilled in the art.

With regard to the shrinking tube, this reference does not teach such explicitly. However using shrink tubing as a fastening means for holding two optical elements together in order to form optical cavity or simply to cover an optical means is very well known in the art as demonstrated by the teachings of Takahashi et al. *Takahashi et al* teaches a heat shrinking tube (300, Figure 8) that may be *wrapped* around the junction of a suction tube (100) and a pipe (132) so that the suction tube and the pipe are jointed and fastened to form the desired optical pipe with a cavity within, (please see Figure 8, column 14, lines 36-49). Takahashi et al teaches that the shrinking tube is shrunk so that it applied certain strength to the junction. It would then have been obvious to one skilled in the art to apply the teachings of Takahashi et al as an alternative fastening means to fasten the mirrored slabs of Farmiga in place in order to form the

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uniformizer construction for the benefit of providing a fastening means with *no filth-collecting gapes* formed in the interior of the joint, *which implicitly will be light-proof*. With regard to the positions of applying the heat shrinking tube it would have been considered to be an obvious matters of design choice to one skilled in the art since the positions of joints therefore the positions of the tube do not effect the performance of the beam-shaper construction as long as the general geometric shape is kept.

Farmiga teaches that the construction with cavity within forms a geometric prism with various geometric shapes of inlet and outlet surfaces, (please see Figure 6). However it does not teach explicitly that the surfaces are of rectangular or square shape. *Levis et al* in the same field of endeavor teaches a light pipe integrator (15, Figure 1, 8, 9 and 10), wherein the light integrator is in the form of a geometric prism with *rectangular shape or square shape* of inlet and outlet surfaces for the benefit of providing desired beam shape to illuminate a liquid crystal display device. It would then have been obvious to one skilled in the art to apply the teachings of *Levis et al* to modify the beam-shaper construction of Farmiga for the benefit of providing a desired uniform beam shape.

The features recited in claims 26-27 are the same as in claims 21-22 and they rejected for the same reasons stated above.

Response to Arguments

10. Applicant's arguments with respect to claims 12, 14, 16, 17, 19-22 have been considered but are moot in view of the new ground(s) of rejection. The newly submitted the claims are fully considered and they are rejected for the reasons stated above.

11. Applicant's arguments concerning the feature of "light proof" is addressed in the paragraphs above. It is implicitly true that the shrinking tube when wrapped around the tube will provide light proof function. The materials of the optical beam-shaping uniformizer construction are not a concern here since such feature is not a claimed limitation.

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12. In response to applicant's arguments, which state that the shrinking tube cannot be applied on the mirrored slabs of the uniformizer construction of Farmiga since it applies force to the middle of the tube, the examiner respectfully disagrees for the reasons stated below. As demonstrated by Figure 4C of Farmiga, it is clear that if one wraps the shrink tube around the circumference of the slabs, the force of the tube which is toward the middle of the tube will just be in the same direction of the force shown in the Figure for holding the slabs. The shrinking tube therefore is perfectly useable in the construction of Farmiga.

13. In response to applicant's argument or challenge concerning the combination of the reference Lewis et al with reference Farmiga, the examiner respectfully points out that it is common knowledge in the art that the geometric shape of the cavity is the key factor for obtaining the desired beam shape. Lewis et al teaches in order to use the light integrator with rectangular cavity to illuminate LCD image display *uniformly* the shape of the cavity of the light integrator must be matched with the shape of the pixels or matrix of the LCD, (as demonstrated in Figure 1 of Lewis reference). It would then have been obvious to one skilled in the art to modify the cavity shape of the uniformizer construction in order to be able to illuminate LCD image display.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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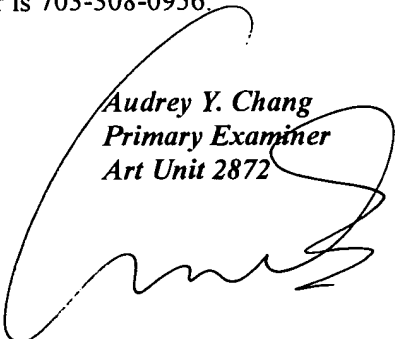
is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A. Chang, Ph.D.
November 20, 2002



Audrey Y. Chang
Primary Examiner
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